

THAT WHICH IS CLAIMED:

1. An oral inhaler suitable for delivering a pharmaceutical formulation to a patient, said inhaler comprising:

5 a container having the pharmaceutical formulation comprising at least one medicament present therein; and

a mouthpiece configured for oral engagement with a patient and in communication with said container, the mouthpiece having an inner surface and an outer surface;

10 wherein the outer surface of the mouthpiece contains at least one longitudinally-extending disuniformity such that when the patient orally engages the mouthpiece at least one void space is created between the outer surface of the mouthpiece and the oral cavity of the patient so as to provide an air flow channel through the at least one void space to facilitate intake of the at least one medicament 15 by the patient.

2. The inhaler according to Claim 1, wherein the at least one longitudinally-extending disuniformity is selected from the group consisting of at least one protrusion, at least one indentation, at least one opening in the outer surface of 20 the mouthpiece, and combinations thereof.

3. The inhaler according to Claim 1, wherein said at least one longitudinally-extending disuniformity comprises a plurality of protrusions.

25 4. The inhaler according to Claim 3, wherein the plurality of protrusions are equidistant from one another.

30 5. The inhaler according to Claim 3, wherein the plurality of protrusions are present opposite to each other along respective sides of the mouthpiece.

6. The inhaler according to Claim 3, wherein the protrusions are present throughout the outer surface of the mouthpiece.

7. The inhaler according to Claim 3, wherein said at least 5 one protrusion is present as one protrusion.

8. The inhaler according to Claim 1, wherein the said at least one longitudinally-extending disuniformity comprises a plurality of indentations.

10 9. The inhaler according to Claim 8, wherein the plurality of indentations comprise two indentations present opposite to each other along opposing sides of the mouthpiece.

15 10. The inhaler according to Claim 1, wherein the longitudinally-extending disuniformity is present as at least one opening.

11. The inhaler according to Claim 10, wherein the at least one opening comprises a plurality of openings.

20 12. The inhaler according to Claim 11, wherein the plurality of openings comprise two openings each present opposite to each other on opposing sides of the mouthpiece.

25 13. The inhaler according to Claim 1, wherein the pharmaceutical formulation comprises at least one medicament.

14. The inhaler according to Claim 13, wherein the at least one medicament is selected from the group consisting of analgesics, anginal preparations, antiinfectives, antihistamines, anti-inflammatories, antitussives, 30 diuretics, hormones, therapeutic proteins and peptides, and combinations thereof.

15. The inhaler according to Claim 13, wherein the at least one medicament comprises albuterol sulphate.

16. The inhaler according to Claim 13, wherein the at least one medicament comprises salmeterol xinafoate.

5 17. The inhaler according to Claim 13, wherein the at least one medicament comprises fluticasone propionate.

18. The inhaler according to Claim 13, wherein the at least one medicament comprises beclomethasone dipropionate.

10 19. The inhaler according to Claim 13, wherein the at least one medicament comprises salmeterol xinafoate and fluticasone propionate.

15 20. The inhaler according to Claim 1, wherein the inhaler is a metered dose inhaler.

21. The inhaler according to Claim 20, wherein the pharmaceutical formulation is a pharmaceutical aerosol formulation comprising at least one medicament and at least one propellant.

20 22. The inhaler according to Claim 21, wherein the at least one propellant is a C₁₋₄ hydrofluoroalkane.

25 23. The system according to Claim 22, wherein the C₁₋₄ hydrofluoroalkane is selected from the group consisting of 1, 1, 1, 2-tetrafluoroethane, 1, 1, 1, 2, 3, 3-heptafluoropropane, and combinations thereof.

30 24. The inhaler according to Claim 1, wherein the inhaler is a dry powder inhaler.

25. The inhaler according to Claim 24, wherein the pharmaceutical formulation is a dry powder pharmaceutical formulation comprising at least one medicament and at least one ingredient.

26. The inhaler according to Claim 25, wherein the at least one ingredient is selected from the group consisting of excipients, lubricants, binders, disintegrators, solvents, solubilizers, co-solvents, and mixtures of the above.

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27. An oral inhaler system for delivering a pharmaceutical formulation to a patient, said inhaler comprising:

a container having the pharmaceutical formulation comprising at least one medicament present therein, the at least one medicament selected from the 10 group consisting of analgesics, anginal preparations, antiinfectives, antihistamines, anti-inflammatories, antitussives, diuretics, hormones, therapeutic proteins and peptides, and combinations thereof; and

15 a mouthpiece configured for oral engagement with a patient and in communication with said container, the mouthpiece having an inner surface and an outer surface;

wherein the outer surface of the mouthpiece contains at least one longitudinally-extending disuniformity such that when the patient orally engages the mouthpiece at least one void space is created between the outer surface of the mouthpiece and the patient so as to provide an air flow channel through the at least 20 one void space to facilitate intake of the at least one medicament by the patient, wherein the at least one longitudinally-extending disuniformity is selected from the group consisting of at least one protrusion, at least one indentation, at least one opening in the outer surface of the mouthpiece, and combinations thereof.

25 28. A method of administering at least one medicament to a patient, said method comprising:

providing an inhaler as defined by Claim 1; and
activating the inhaler to deliver the at least one medicament to the patient.

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29. The method according to Claim 28, wherein the at least one medicament is selected from the group consisting of analgesics, anginal preparations, antiallergics, antiinfectives, antihistamines, anti-inflammatories,

antitussives, diuretics, hormones, therapeutic proteins, peptides, medicaments for treating erectile dysfunction, and combinations thereof.

30. The method according to Claim 28, wherein the at least one medicament is selected from the group consisting of fluticasone, beclomethasone, salmeterol, albuterol, ipratropium, salts thereof, esters thereof, solvates thereof, and combinations thereof.

31. The method according to Claim 28, wherein the at least one medicament comprises albuterol sulfate.

32. The method according to Claim 28, wherein the at least one medicament comprises salmeterol xinafoate and fluticasone propionate.

33. The method according to Claim 28, wherein the at least one medicament comprises fluticasone propionate.

34. The method according to Claim 28, wherein the at least one medicament comprises beclomethasone dipropionate.